

Attorney Docket No: 23242 -1010  
(260/147) 5/24/03

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: EYDELMAN, Gregory

Serial No.: 09/738,235

Group Art Unit: 2862

Filed: December 15, 2001

Examiner: Dixomara Vargas

For: MRI ANTENNA

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Commissioner for Patents  
Alexandria, Virginia 22313-1450

MAY 16 2003

T.C. 2800

## AMENDMENT FINAL ACTION UNDER 37 C.F.R. § 1.116

In response to the Office Action dated December 16, 2001, the above-identified patent application is being amended as shown below in a Clean Version of the Amendments and as shown in the Marked Up Version of the Amendments, attached hereto.

Clean Version of the Amendments

Claims 1, 22, 27, 30, 33, 61, 62 and 70 are being amended to read as follows:

## 1. (Amended) An MRI antenna, comprising:

an inner conductor with first and second ends for being electrically connected across a capacitor to tune the inner conductor to a frequency, the first and second ends providing an output of the antenna; and

an outer conductor substantially surrounding the inner conductor, the outer conductor having first and second ends for being electrically connected across a capacitor to tune the outer conductor to the frequency;

wherein:

05/16/2003 DSASFAI 00000002 500988 09738235

01 FC:1202 108.00 CH  
02 FC:1201 84.00 CH

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C1  
and

the inner and outer conductors are inductively coupled during operation;

the inner and the outer conductors are electrically unconnected to each

other.

C2  
232.

(Amended) An MRI antenna, comprising:

a coaxial cable unit comprising:

an inner conductor with first and second ends and;

an outer conductor substantially surrounding the inner conductor;

wherein:

the outer conductor and the inner conductor are inductively coupled and  
tunable to the Larmor frequency of the species of interest during operation;

the inner and the outer conductors are electrically unconnected to each  
other; and

the inner conductor provides an output of the antenna.

C3  
282.

(Amended) An MRI antenna, comprising:

detecting means for directly detecting magnetic resonance signals emitted  
by a subject;

receiving means for inductively receiving signals corresponding to the  
detected magnetic resonance signals from the detecting means, and for providing received  
signals for analysis, wherein the receiving means is electrically unconnected to the detecting  
means; and

means for shielding the receiving means from direct detection of the  
magnetic resonance signals means.

~~31~~ 30.

(Amended) An MRI antenna comprising:

a first inner conductor with first and second ends;

a first outer conductor with first and second ends, the first outer conductor substantially surrounding the first inner conductor to form a first coaxial cable unit, the first inner conductor and the first outer conductor being inductively coupled during operation;

a second inner conductor with first and second ends;

a second outer conductor with first and second ends, the second outer conductor substantially surrounding the second inner conductor to form a second coaxial cable unit, the second inner conductor and the second outer conductor being inductively coupled during operation;

wherein:

the inner conductors of the first and second coaxial cable units are electrically connected to form a first closed circuit tunable to a frequency;

the outer conductors of the first and second coaxial cable units are electrically connected to form a second closed circuit tunable to the same frequency;

the first closed circuit is electrically unconnected to the second closed circuit; and

the output of the antenna is provided from the first closed circuit comprising the inner conductors.

~~34~~ 35.

(Amended) The MRI antenna of Claim 30, further comprising:

a third inner conductor with first and second ends;

a third outer conductor with first and second ends, the third outer conductor substantially surrounding the third inner conductor to form a third coaxial cable unit

CB  
end  
defining a region for receiving a body part, the third inner conductor and the third outer conductor being inductively coupled during operation;

wherein the first closed circuit further comprises the third inner conductor of the third coaxial cable unit and the second closed circuit further comprises the third outer conductor of the third coaxial cable unit.

6361. (Amended) An MRI antenna comprising:

a first inner conductor with first and second ends;

a first outer conductor substantially surrounding the first inner conductor;

the first inner conductor and the first outer conductor being inductively coupled during operation, and defining a first coaxial cable unit;

CL  
could  
a second inner conductor and a second outer conductor substantially surrounding the second inner conductor, the second inner conductor and the second outer conductor being inductively coupled during operation, and defining a second coaxial cable unit;

wherein:

the first and second coaxial cable units are concentric and lie substantially in the same plane, the second coaxial cable unit being within a region defined by the first coaxial cable unit;

the first outer conductor and the second outer conductor each have first and second adjacent ends, the first end of the first outer conductor being directly connected to the first end of the second outer conductor, the second end of the first outer conductor being directly connected to the second end of the second outer conductor, and the first end of the first outer conductor being electrically connectable to the second end of the first outer conductor across a capacitor to tune the outer conductors to a frequency;

74

C

a first end of the first inner conductor is directly electrically connected in series to a first end of the second inner conductor and a second end of the first inner conductor is directly electrically connected in series to the second end of the second inner conductor; and the first and second ends of the second inner conductor are electrically connectable across a capacitor to tune the inner conductors to the frequency and to provide an output of the antenna.

C6  
end  
66  
62

(Amended) An MRI antenna comprising:

an outer conductor with first and second ends for being electrically connected across a capacitor to tune the outer conductor to a frequency; and

a plurality of inner conductors substantially surrounded by the outer conductor, the inner conductors being connectable across at least one capacitor to tune the inner conductors to the frequency, the outer conductor and the inner conductors being inductively coupled during operation;

wherein an output of the antenna is provided from the inner conductors.

75

(Amended) An MRI antenna, comprising:

an inner conductor with first and second ends electrically connectable across a capacitor to tune the inner conductor to a frequency, the first and second ends providing an output of the antenna;

C7  
could  
a first outer conductor substantially surrounding the inner conductor, the first outer conductor having first and second ends being electrically connected across a capacitor to tune the first outer conductor to the frequency;

a second outer conductor substantially surrounding the first outer conductor, the second outer conductor having first and second ends electrically connected across

75

C

C7  
end  
a capacitor to tune the second outer conductor to the frequency, the second outer conductors each defining a plurality of holes there through; and

the inner conductor being inductively coupled to the first outer conductor  
and the first and second outer conductors being inductively coupled, during operation.

Add the following new claims:

R.126  
44 89 63  
-86. (New) The antenna of claim 63, wherein:

the inner and outer conductors of the first coaxial cable unit are electrically unconnected; and

the inner and outer conductors of the second coaxial cable unit are electrically unconnected. --

C8  
Cont'd  
74 90 46  
-87. (New) The antenna of claim 62, wherein the plurality of inner conductors are electrically unconnected to the outer conductor. --

74 91 75  
-88. (New) The antenna of claim 75, wherein:

the inner conductor is electrically unconnected to the first outer conductor and to the second outer conductor. --

94 92  
-89. (New) An MRI antenna, comprising:

an inner conductor with first and second ends for being electrically connected across a capacitor to tune the inner conductor to a frequency, the first and second ends providing an output of the antenna; and

an outer conductor encasing the inner conductor, the outer conductor having first and second ends for being electrically connected across a capacitor to tune the outer conductor to the frequency;

wherein:

PTO/SB/17 (01-03)

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**FEE TRANSMITTAL**  
**for FY 2003**

Effective 01/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT (\$)** 602**Complete if Known**

Application Number	09/738,235
Filing Date	12/15/2001
First Named Inventor	EYDELMAN, Gregory
Examiner Name	VARGAS, Dixomara
Art Unit	2862
Attorney Docket No.	23242-1010

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:

Deposit Account Number: 50-0988

Deposit Account Name: Kaye Scholer LLP

The Commissioner is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) during the pendency of this application☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
<b>SUBTOTAL (1) (\$)</b>					

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	84	2201	42	Independent claims in excess of 3	
1203	280	2203	140	Multiple dependent claim, if not paid	
1204	84	2204	42	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	
<b>SUBTOTAL (2) (\$)</b>					192

\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1051	130	2051	65	Surcharge - late filing fee or oath
1052	60	2052	25	Surcharge - late provisional filing fee or cover sheet
1053	130	1053	130	Non-English specification
1812	2,520	1812	2,520	For filing a request for ex parte reexamination
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action
1251	110	2251	55	Extension for reply within first month
1252	410	2252	205	Extension for reply within second month
1253	930	2253	465	Extension for reply within third month
1254	1,450	2254	725	Extension for reply within fourth month
1255	1,970	2255	985	Extension for reply within fifth month
1401	320	2401	160	Notice of Appeal
1402	320	2402	160	Filing a brief in support of an appeal
1403	280	2403	140	Request for oral hearing
1451	1,510	1451	1,510	Petition to institute a public use proceeding
1452	110	2452	55	Petition to revive - unavoidable
1453	1,300	2453	650	Petition to revive - unintentional
1501	1,300	2501	650	Utility issue fee (or reissue)
1502	470	2502	235	Design issue fee
1503	630	2503	315	Plant issue fee
1480	130	1480	130	Petitions to the Commissioner
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)
1808	180	1808	180	Submission of Information Disclosure Stmt
8021	40	8021	40	Recording each patent assignment per property (times number of properties)
1809	750	2809	375	Filing a submission after final rejection (37 CFR 1.129(a))
1810	750	2810	375	For each additional invention to be examined (37 CFR 1.129(b))
1801	750	2801	375	Request for Continued Examination (RCE)
1802	900	1802	900	Request for expedited examination of a design application

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3) (\$)** 410**SUBMITTED BY**

Name (Print/Type) Brandon N. Sklar

Signature 

Registration No. (Attorney/Agent)

31,667

(Complete if applicable)

Telephone (212) 836 - 8653

Date May 16, 2003

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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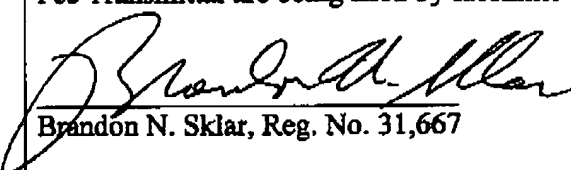
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**NOTE: AFTER FINAL**

Re: Amendment After Final Action, App. No. 09/738,235

I certify that the attached Amendment After Final Action, Petition for Extension of Time and Fee Transmittal are being filed by facsimile to the number above, on May 16, 2003.

  
Brandon N. Sklar, Reg. No. 31,667

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the inner and outer conductors are inductively coupled during operation;  
and

the inner and the outer conductors are electrically unconnected to each  
other. --

*C8 end*  
*65*  
*83*  
--90. (New) The MRI antenna of claim *89*, wherein:

the inner conductor comprises a plurality of inner conductor segments,  
wherein adjacent inner conductor segments are electrically connected across a capacitor; and

the outer conductor comprises a plurality of outer conductor segments,  
wherein adjacent outer conductor segments are electrically connected across a capacitor. --

*3894*  
--91. (New) The MRI antenna of claim *30*, wherein:

at least one of the first and second coaxial cable units define a region to receive  
a body part. --

#### REMARKS

##### I. Status of the Application

Claims 1, 22, 27, 30, 33, 61, 62 and 70 are being amended. Claims 86-91 are  
new.

As discussed below, it is respectfully submitted that the Final Rejection is  
improper and should be withdrawn. The present claim amendments should therefore be entered.

If, however, it is found that the Final Rejection is proper, the present amendments  
should be entered because they place the claims in condition for allowance or in better condition  
for appeal. The amendments were not presented earlier because at least certain of the  
amendments to claims 1, 22, 27, 30, 33, 61, 62 and 70 address a statutory double-patenting  
rejection which was asserted for the first time in this Final Rejection. 37 C.F.R. § 1.116.